ers. What psychologist has not experienced some form of emotion when he has envisaged the pile of trash and supertrash accumulated behind the drawers at the periodical laboratory housecleaning festivity! The affective experience of the conscientious director of the laboratory is further embellished by the knowledge that this trash is expensive to replace and wasteful of energy and time spent in reorganizing the contents of the cabinet.

In an earlier attempt to prevent mutilation of papers in this wise a cardboard of medium weight was placed in each drawer on top of the papers. Instructions printed in bold characters advised students and others to replace it before closing the drawer. But since failure to heed the advice did not entail consequences similar to the infraction of a natural law, treatment of the situation by suggestion was unsuccessful. The next step was to tack a piece of cardboard over the back of the drawer and reaching forward about eight or ten inches. While this device proved to be a great help, it did not prevent catching and rolling back at the front of the drawer when it was pulled out.

The best solution of the difficulty seems to lie in a very simple arrangement which if embodied in the original construction of a cabinet ought to be less expensive than a case of drawers, but it can also be installed where drawers are already in use. In the simpler plan the drawers are slides that fit into grooves at the side of the cabinet and are made with strips 1½ inches high at the front and a trifle lower at the back, but affording ample room for the standard-sized sheets. On each slide a heavy cardboard cover is hinged at the back with heavy binder's cloth over the top of the strip and is cut large enough to fall just within the front strip or face of the slide. A leather "pull" or flap by means of which the cover can be readily lifted is fastened to it near the front. The apparent inconvenience of having to pull the drawer almost entirely out before the cover can be sufficiently lifted to extract the papers is more of an advantage than a hindrance in view of the well-known fact that most of the untidiness of cabinets is due to the careless extraction and introduction of papers with drawers insufficiently opened. Papers that lie beneath are thereby frequently pulled or pushed back and crumpled up. If the cabinet were constructed so that the grooves at the sides extended six inches or more, or in other words if the sides of the cabinet were built six or more inches wider than the depth of the slides, the slides could be held in place while the covers were lifted and the papers handled, provided that the remaining slides were always systematically returned to their full extent.

A neat and carefully arranged "color cabinet" is always an asset to the well-appointed laboratory and there seems to be no reason why we should not begin at this point to inculcate the ideals of order and system in the minds of our young scientists and at the same time to increase the efficiency of the laboratory according to those standards for which the newer generation is so valiantly fighting!

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THE HUMAN YOLK SAC

SOME time ago there came under my observation two specimens of early human twins, both of which showed a direct developmental relation to single yolk sacs. For record I published a brief note[1] announcing the discovery of this important condition and emphasizing the single-ovum origin which it implies; in addition were appended several deductions or speculations of secondary importance. In a recent issue[2] of this journal Professor F. T. Lewis has raised certain objections which demand consideration that the intent of my former condensed account be not misunderstood.

The second specimen described in that publication had a single yolk sac and yolk stalk connected to one embryo of the twin pair; the other embryo lacked both stalk and sac. Professor Lewis believes this indicates the early obliteration of one of the originally paired stalks. My interpretation was that an early unequal division of the embryonic mass had left

[1] *Anatomical Record*, Vol. 23, pp. 245-251.
[2] SCIENCE, Vol. 55, p. 478.

one member essentially without a sac, as such. This conclusion was based on the following facts:

1. There is no external evidence of a second yolk sac or stalk although the most careful search was made for them.

2. The umbilical cord lacks a yolk-stalk component, as proved microscopically by serial sections.

3. The single yolk sac shows no indication of a second stump, nor are its vessels suggestively arranged as if at any previous time in relation to a second stalk.

4. Although the yolk stalk normally becomes separated from the *gut* in embryos slightly younger, its connection with the *yolk sac* is retained until later. (On this point Professor Lewis's criticism unintentionally carries the erroneous implication that it is even remarkable that the other stalk had retained its connection with the sac until this period—and hence the early disappearance of one is entirely obvious!).

5. The yolk stalk, with its vessels and investing tissue, usually is recognizable until a considerably later period than the six weeks' embryo in question; Minot records that it persists beyond the fourth month but seems to have disappeared by the sixth; Lönnberg states that portions of its vessels may be found rarely at birth; and in any case they are easily demonstrable in embryos five or more times the size of my specimen.

Evaluating these several points I was led to favor an early primary separation, rather than a late secondary one with the coincidence of precocious disjunction of a stalk and its simultaneously precocious disappearence. After thorough reconsideration I still incline to the same opinion though recognizing fully the possibility of the alternative interpretation which I myself had considered but too summarily dismissed without mention. But whichever interpretation is correct, the real objective of the communication is equally supported, for both refer to a single-ovum origin.

In the further discussion of this specimen several deductions were drawn as to the physiological import of absence of the yolk sac. No implication of morphological development, except mention of the ingrowth of bloodvessels, was meant, and I supposed the context made this clear; if not, several statements must have seemed as revolutionary to others as they did to Professor Lewis. When, therefore, I spoke of the yolk sac as "not essential to the growth of an embryo or the proper differentiation of its parts," I was merely referring to the "growth" (that is, increase in size) of an embryo and its organs, and the coincident "differentiation" (or orderly progress) of its developing parts. The sole aim was to draw attention to the physiological insignificance of the yolk sac as related to growth. This is attested by the remainder of the same sentence: "indeed, the embryo in question is slightly larger than its twin . . . ," and again further on: "In the earliest human embryos known, when it might be of real use, it (the yolk sac) is a simple entodermal sac containing masses of coagulum; growth to a conspicuous size is attained relatively late, long after adequate nutritional relations with the mother have been thoroughly established." Little did I suspect that any one would infer an intended reference to initial morphological development in its strict sense. Of course, the gut and allantois had to form from entoderm somewhere, and the yolk sac, broadly speaking, is the undoubted source, yet it is entirely conceivable that essentially all the yolk sac, as a significant *sac,* might be dispensed with and still the gut would arise from entoderm which for the most part normally forms its roof. With this in mind I wrote that the fission "was presumably such that one received all, or essentially all, the cells destined to form a yolk sac," etc. Again, that I recognized the possibility of a rudimentary or abortive sac is seen in a later sentence: "That tiny vascular anlages of yolk-sac ancestry actually existed . . . is of course conceivable."

In short, my aim was remote from the heresy of denying the gut an entodermal, yolk-sac origin; on the contrary it was to re-emphasize from the functional side precisely what Professor Lewis has designated as a platitude: "But it is universally recognized that the yolk sac does its work in early stages, and . . . usually persists as a functionless rudiment until

birth . . ." When, therefore, the foregoing complete explanation was furnished Professor Lewis he generously replied: "The chief interest in anatomical publications is in the observations they record; and as to the interpretation of the unusual specimens which you described so clearly, we seem to be in entire agreement."

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SCIENTIFIC BOOKS

Reptiles of the World. By RAYMOND DITMARS. New York, The Macmillan Company, 1922. pp. xi plus 373; 90 plates, 1 colored.

This book is a reprint of the first edition (1910), the only change being in the arrangement of plates. I believe now, as I did in 1911 (SCIENCE, N. S., XXXIV, pp. 54-55), that it is an excellent popular account of a group that has been neglected by writers on natural history, that it is rather well proportioned, and that it contains much of interest to professional zoologists and herpetologists.

I made a few rather unimportant criticisms in the review of the first edition, viz., a few typographical errors, absence of plate references, too few headings, the amount of space devoted to the habits of captive specimens, and an antiquated nomenclature. Unfortunately, since the text is an exact reprint, these criticisms still apply, and it must now be added that the book is decidedly out-of-date. Twelve years see many additions to our knowledge of even those groups which receive relatively little attention, of which the Reptilia is one: more forms are known, more information upon habits and distribution is available, and the accepted nomenclature is different than in 1910. Much of the new information might well find a place even in a popular book.

It is not because I am interested in systematic herpetology that I protest against the retention in works of this kind of an obsolete nomenclature. Admittedly it is not important in itself to the amateur naturalist whether the racers are called *Bascanion, Zamenis* or *Coluber,* and it may be granted that the use of the latest accepted names would often confuse the amateur naturalist or beginning student who has become familiar with the forms under other names. However, it must also be admitted that the retention of old names in recent popular natural histories and text-books makes it equally difficult for the student to read the modern literature on particular groups. In 1910 there was some excuse for retaining an out-of-date nomenclature, since there was not at that time a recent check-list of the North American reptiles; but the present edition would be much more valuable if the nomenclature were based upon the excellent check-list of Stejneger and Barbour, with the names used in the earlier edition given as synonyms.

In one respect the book is decidedly improved. The total number of pages, including plates, has been reduced from 463 to 419 by printing the plates on both sides of the page. The first edition was too bulky, and the present one would be improved by the use of a thinner text paper.

As I pointed out in 1911, there is a distinct need for a general book upon the natural history of reptiles. This one goes a long way towards meeting this need; but it is sincerely to be hoped that before another printing the old plates will be discarded and the subject matter brought up to date.

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SPECIAL ARTICLES

THE MEASUREMENT OF EXTREMELY SMALL CAPACITIES AND INDUCTANCES

HYSLOP and Carman[1] have recently described an undamped wave method of measuring small changes of capacity such as are obtained by introducing liquids as the dielectrics in the capacity of an oscillating circuit. Thomas[2] has applied this same beat-note oscillating circuit method to the measurement of the capacity of transmission line insulators.

The authors described[3] a method of using the hot-cathode Braun tube as the detector of

[1] *Phys. Rev.,* XV, p. 243, 1920.
[2] *Electrical Journal,* XVIII, p. 349, 1921.
[3] *Phys. Rev.,* XVIII, p. 331.